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Alan W. Steele, M.D., Ph.D.
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210

EXAMINER	
ROONEY, NORA MAUREEN	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/814,620	TZIANABOS ET AL.	
	Examiner	Art Unit	
	NORA M. ROONEY	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,17,18 and 98-102* is/are pending in the application.

4a) Of the above claim(s) *3,98-100 and 102* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2, 4-7, 17-18 and 101* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/20/2008 has been entered.

2. Claims 1-7, 17-18 and 98-102 are pending.

3. Claims 3, 98-100 and 102 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 03/19/2008

4. Claims 1-2, 4-7, 17-18 and 101 are currently under examination as they read on a method for treating urticaria comprising administering PSA1 to a subject.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-2, 4-7, 17-18 and 101 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification does not reasonably provide enablement for a method for treating **an allergic condition other than asthma** in **a subject**, comprising: administering to **a subject** having **an allergic condition other than asthma an isolated polymer** in an effective amount to treat the allergic condition, wherein the polymer **comprises repeating units of a charge motif characteristic of B. fragilis polysaccharide A (PSA), the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate, and sulfonate** of claim 1; wherein the motif is a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of phosphate, phosphonate, sulfate, and sulfonate of claim 2; wherein the subject is **free of symptoms otherwise calling for treatment with the polymer** of claim 4; wherein the polymer is **a polysaccharide** of claim 5; wherein the polymer is **a bacterial capsular polysaccharide** of claim 6; wherein the polymer is PSA1 of claim 7; wherein the method further comprises administering to **the subject** an anti-allergy medicament selected from the group consisting of glucocorticoids, antihistamines, and anti-IgE antibodies of claim 17; wherein the administering comprises administering to **the subject** having **an allergic condition other than asthma** multiple doses of the **isolated polymer** to treat **the allergic condition** of claim18; and wherein the **allergic condition other than asthma is urticaria** of claim 101. The specification disclosure does not enable one skilled in the art to practice the invention without an undue amount of experimentation for the same reasons as set forth in the Office Action mailed on 06/19/2008.

Applicant's arguments filed on 10/20/2008 have been fully considered, but are not found persuasive.

Applicant argues:

"The specification, together with the art, provides enablement support for the claimed invention. Firstly, the specification provides a genus of well characterized polymers with a specific charge motif. Secondly, the specification shows that polymers as diverse as peptides and polysaccharides show an immunomodulatory effect, as long as the polymers have the recited charge motif (See *e.g.,* Example 1, page 49 and Examples 6 and 7, pages 54-55). Thirdly, the methods of treatment are directed to allergic conditions, which is a single category disease that is well described in the art and is characterized by an increase in serum IgE in the subject. Fourthly, in Examples 5 and 8 of the specification (pages 52-57), Applicant shows that administration of the polymers with the recited charge motif result in a decrease in the level of IgE antibodies. Finally, the teachings of the instant application are supported by the art, which has established the relationship between the specific charge motif of the polymer and the immunomodulatory effect of the polymer. No more is required to establish enablement of the claimed invention.

The Examiner states in the paragraph bridging pages 5-6 of the Office Action that "the specification does not disclose any examples of PSA1 being used to treat any allergic disease other than asthma" and that "the art is highly unpredictable as to what will be a therapy for any particular disease". However, in contrast to the assertion by the Examiner, the art as to allergic conditions is not unpredictable in so far as it involves the effects of a reduction of IgE levels. The art has established that allergic conditions are characterized by a similar physiological event, namely increased levels of IgE antibodies, and that allergic conditions therefore can be treated by lowering the level of IgE antibodies. An "allergic condition" as defined in the specification on page 12, lines **13-14,** is an "acquired hypersensitivity to a substance (allergen)". A hypersensitive reaction against an allergen is characterized by a rapid increase in IgE antibodies against the antigen. In fact, measuring the levels of IgE antibody is a diagnostic tool for determining if a subject is suffering from an allergic condition, and a decrease in serum IgE is correlated with the efficacy of treatment for an allergic condition (See *e.g.,* page 17, lines 28 through page 18, line 1). Thus, a treatment regimen that results in the lowering of allergen specific IgE levels is an effective treatment method for the allergic condition. The application demonstrates that polymers with the recited charge motif result in the decrease of the level of IgE in a model of allergy, that is, an allergic asthma model. An increase in IgE levels is the expected consequence of a challenge with any sensitizing allergen in any model of allergy; it is not a function of the particular model of allergy selected. The observed decrease in IgE levels resulting from treatment with a polymer of the invention is an indication that the polymers of the invention can be used to treat any allergic condition.

The Examiner also states that the specification does not provide adequate support for any isolated polymer among the recited polymers for the claimed methods of treatment. However, in contrast to the assertion by the Examiner, the specification, in combination with the art, establishes the relationship between the structure of the polymers and their physiochemical properties. In Examples 5 and 8 of the specification (pages 52-57), Applicant shows that administration of the polymers with the recited charge motif results in a decrease in the level of IgE antibodies. In addition, the specification provides that polymers as diverse as peptides and polysaccharides have a consistent immunomodulatory effect, as long as the polymers have the recited charge motif (See *e.g.,* Example 1, page 49 and Examples 6 and 7, pages 54-55). Furthermore, the specification has incorporated by reference US 5,679,654, US 5,700,787 and WO 00/59515. These documents provide a detailed analysis of polymers with specific charge motifs and their immunomodulatory effects. The teachings in these documents show that polymers with the motif recited in the instant application have a predictable and consistent immunomodulatory effect, while polymers with a slightly different charge motif do not have such an effect (See *e.g.,* WO 00/59515, pages 35-43). Thus, a person of ordinary skill in the art can, without undue experimentation, determine if a polymer can be used to treat an allergic condition according to the methods of the claimed invention, namely by determining if the polymer has the recited charge motif.

The Examiner refers to Kalka-Moll et al. to support the assertion that the description encompasses many species that the art shows would not work in the claimed invention. Respectfully, the Examiner has misinterpreted the teachings of Kalka-Moll et al. The cited reference evaluates the relationship between length and concentration of the administered polymer and its immunomodulatory effect and teaches that the *potency* of the immunomodulatory effect is dependent on the concentration and the length of the administered polymer. Thus, a person of ordinary skill in the art can rely on the teachings of Kalka-Moll et al. to determine which concentration and length of polymer is required to obtain an optimal immunomodulatory effect. The teachings of Kalka-Moll et al. therefore further support the enablement of the claimed invention.

The Examiner also states that the examples encompass treating asthma include PSA1 and CP1, but that support for the terms "polysaccharide" or "capsular polysaccharide" in a method of treating an allergic condition other than asthma is not adequately disclosed. However, in contrast to the assertion by the Examiner, the specification provides enablement support for the use of polysaccharides and capsular polysaccharides as long as they comprise the recited charge motif, in the treatment of asthma and allergic conditions other than asthma. In addition, the specification also provides support for the treatment of asthma and allergic conditions other than asthma using any polymer with the recited charge motif. As acknowledged by the Examiner, the specification provides examples for the treatment of asthma with PSA1 and CP 1. The examples demonstrate that the levels of anti-allergen IgE antibodies are lowered upon administration of the polymers. As the art provides that the lowering of IgE levels is a general treatment method for all allergic conditions, the examples support the enablement of the treatment off asthma and allergic conditions other than asthma. Furthermore, the teachings of the specification show that PSA1 and CP1 have an immunomodulatory effect and the specification provides which polymers, in addition to PSA1 and CP 1 show an immunomodulatory effect. Namely, any polymer with the recited charge motif. Thus, these teachings combined provide that polymers with the recited charge motif enable the treatment of an allergic condition other then asthma.

The Examiner also reasons that the term "comprising" is open language, and that the scope of the claim therefore includes the addition of additional molecules, or the possibility that the methods for treating asthma are not the result of the charge motif of the polymers. Further, according to the Examiner, a person of ordinary skill in the art would not know what can be added to the recited polymer that would not impact the ability of the polymer to treat the allergic disease. Applicant respectfully questions the relevance of the Examiner's argument. Applicant has shown that the polymers with the recited charge motif can be used to treat allergic conditions. The hypothesis by the Examiner that additional molecules may negatively or positively impact the treatment of allergic conditions is not a legal basis for questioning the enablement of the claimed invention.

Further, according to the Examiner, the genus of polymers encompassed by the instant recitation is limitless. Applicant respectfully notes that the genus is circumscribed by a precise definition of a particular charge motif, separating the genus from all other polymers. Applicants have shown that polymers with such a charge motif can be used to treat allergic condition. As the class is clearly defined and the claimed functionality has been shown to be responsible for the activity of the polymers, the requirement for enablement has been met.

Also, according to the Examiner, the claims are not enabled for treating a patient who is free of "symptoms otherwise calling for treatment with the polymer". Applicant respectfully disagrees with this assertion. The specification (page 13, lines 17-26) provides examples of subjects that are free of indications that would otherwise call for treatment with the polymer. These subjects include subjects that do not have an infection, surgery, trauma, a Thl cell responsive disorder etc. Thus, a person of ordinary skill in the art would not be required to engage in undue experimentation to determine if a subject is free of "symptoms otherwise calling for treatment with the polymer".

Further, according to the Examiner, the recitation of administering comprises delivering an aerosol to an airway of the subject to treat diseases other than asthma is not enabled. The Examiner reasons that it

would require an undue amount of experimentation by one of ordinary skill in the art to determine what allergic diseases will be treated by an aerosol delivery mode of administration other than asthma or another respiratory disease. Applicant respectfully disagrees with this assertion. However, without conceding to the Examiner' s position and merely in the interest of expediting prosecution, Applicant has amended claim 3 to clarify that only hayfever and allergic rhinitis are treated by an aerosol delivery mode. As acknowledged by the Examiner, the treatment of respiratory diseases, such as hayfever and allergic rhinitis, by an aerosol delivery mode, would not require undue experimentation.

Finally, the Examiner has not established a *prima facie* enablement rejection of the claims that refer to polysaccharide and bacterial capsular polysaccharide polymers as the arguments set forth by the Examiner do not seem to question the enablement of the methods of the rejected claims, wherein the polymer is a polysaccharide or bacterial capsular polysaccharide.

In conclusion, the application provides enablement support for the claimed invention, and the Examiner has not established that a person of ordinary skill in the art would need to engage in undue experimentation to practice the claimed invention. "

It is the Examiner's position that the specification and state of the art at the time of invention does not adequately disclose the instant invention such that a skilled artisan could practice the invention commensurate in scope with the claims. Applicant's assertion that the genus of "polymers comprising repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A, the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate and sulfonate" including polymers as diverse as peptides and polysaccharides with the recited charge motif is well characterized is not persuasive. The genus of compounds encompassed by the instant claim recitation is nearly limitless, so it is unlikely that the genus of compounds could be well characterized. The Examiner agrees that some compounds of this genus are well-characterized. However the number of species that would represent the genus of compounds encompasssed by the instant specification or state of the art at the time of invention.

Applicant's assertion that allergic conditions are "a single category disease" "characterized by an increase in serum IgE in the subject is too simplistic. The genus of allergic

diseases exhibits diverse etiologies and phenotypes. Therefore, to assert that a treatment for one will be a treatment for all is not persuasive.

Applicant's assertion that the art as to allergic conditions is not unpredictable in so far as it involves the effects of a reduction of IgE levels, that allergic conditions can be treated by lowering the level of IgE antibodies; and a treatment regimen that results in the lowering of allergen specific IgE levels is an effective treatment method for the allergic condition is not persuasive. The post-dated state of the art shows that zwitterionic polymers affect the immune system in a variety of ways. The art of Mazmanian et al. (PTO-892; Reference U) teaches that the recited zwitterionic polymers interact with T cells, B-cells and can direct the development of the immune-system toward a Th1 phenotype to suppress inflammation in general. The reference does not teach or suggest that zwitterionic polymers may be used to treat any particular allergy, much less all allergies or that zwitterionic polymers have any direct affect on IgE production. Therefore, the Examiner is confused as to why Applicant is implying that zwitterionic polymers work to lower IgE levels. Zwitterionic polymers affect the immune system in a variety of ways, so it is entirely unpredictable how zwitterionic polymers will affect the immune system in any particular allergic disease, having a particular phenotype. In any particular allergic state, different cytokines, antibody profiles and T cell populations are present and the art is replete with studies showing the diversity of allergic responses and effectiveness of therapeutic strategies. Therefore, it is entirely unpredictable how zwitterionic polymers will affect any given allergic response, much less all allergic responses. Applicant's assertion that the observed decrease in IgE levels resulting from treatment with a polymer of the invention in an asthma model is an indication that the polymers of the invention can be used to treat any allergic condition is not

persuasive. Applicant's assertion that the teachings of the instant application are supported by the art, which has established the relationship between the specific charge motif of the polymer and the immunomodulatory effect of the polymer and that no more is required to establish enablement of the claimed invention is not persuasive. The Examiner has provided evidence that the recited polymers are not predicted to work on all allergic diseases. Applicants are encouraged to submit data commensurate in scope with the claims to provide evidence that the claims are in fact enabled.

Applicant's assertion that the Examiner has misinterpreted the teachings of Kalka-Moll et al. because the cited reference evaluates the relationship between length and concentration of the administered polymer and its immunomodulatory effect and teaches that the potency of the immunomodulatory effect is dependent on the concentration and the length of the administered polymer is unpersuasive. The Examiner has relied on the teachings within Kalka-Moll that the polymer length affects the ability to stimulate cellular immunity. The Examiner is not concerned with any potency teaching or concentration. The Examiner is only concerned with the fact that zwitterionic polymers of having different structures stimulate cellular immunity differently, given that all of the zwitterionic polymers of Kalka-Moll et al. are encompassed by the instant claim recitations. Kalka-Moll et al. shows that different zwitterionic polymers have different cell stimulatory effects. Cell stimulatory affects are directly tied to the claimed invention. Therefore, the Examiner asserts that the genus of all zwitterionic polymers cannot be predicted to have the same effect in vivo. The invention is not an invitation to figure out which zwitterionic polymers work. Rather, the specification must demonstrate that the invention is enabled commensurate in scope with the claims.

The Examiner maintains that the term "comprising" is open language that opens the claimed polymers to include additional molecules wherein the methods are not the result of the charge motif of the polymers at all. Applicant's assertion that the hypothesis by the Examiner that additional molecules may negatively or positively impact the treatment of allergic conditions is not a legal basis for questioning the enablement of the claimed invention is entirely unpersuasive. It is extremely relevant to the enablement of the instant claims to establish the structure of the molecules encompassed for use in the claimed invention. For example, a "zwitterionic polymer" attached to an allergen may be used to treat allergies irrespective of the zwitterionic polymer. Such a molecule is encompassed by the instant claim recitations. Applicant is not enabled for the use of any "polymer" that "comprises" the recited charge motif.

The Examiner also maintains that the specification has not adequately disclosed a method of treating a patient who is free of symptoms otherwise calling for treatment with the polymer. The Examiner is confused as to why patients without infection, surgery, trauma etc. are even contemplated in this method. Even if the patient had those conditions, would the method for treating allergy not work? In any case, the method of claim 4 encompasses patients without allergy and the specification is not enabled for a method to prevent allergy. Therefore, the rejection is maintained.

7. Claims 1-2, 4-7, 17-18 and 101 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant is in possession of treating asthma in a mouse by injecting the mouse with isolated PSA1.

Applicant is not in possession of: a method for treating **an allergic condition other than asthma** in **a subject**, comprising: administering to **a subject** having an allergic condition other than asthma **an isolated polymer** in an effective amount to treat the allergic condition, wherein the polymer **comprises repeating units of a charge motif characteristic of B. fragilis polysaccharide A (PSA), the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate, and sulfonate** of claim 1; wherein the motif is a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of phosphate, phosphonate, sulfate, and sulfonate of claim 2; wherein the polymer is **a polysaccharide** of claim 5; wherein the polymer is **a bacterial capsular polysaccharide** of claim 6; wherein the polymer is PSA1 of claim 7; wherein the method further comprises administering to **the subject** an anti-allergy medicament selected from the group consisting of glucocorticoids, antihistamines, and anti-IgE antibodies of claim 17; wherein the administering comprises administering to **the subject** having **an allergic condition other than asthma** multiple doses of the **isolated polymer** to treat **the allergic condition** of claim18; and wherein the allergic condition other than asthma is urticaria of claim 101 for the same reasons as set forth in the Office Action mailed on 06/19/2008.

Applicant's arguments filed on 10/20/2008 have been fully considered, but are not found persuasive.

Applicant argues:

> "The rejected claims pertain to a treatment of an allergic condition other than asthma or eczema by administration of a polymer with a specific charge motif. Applicant has shown that correlation exists between the structure of the recited polymers and the function of the claimed methods of treatment. Firstly, the specification provides a genus of well characterized polymers with a specific charge motif. Secondly, the specification shows that polymers as diverse as peptides and polysaccharides show an immunomodulatory effect, as long as they have the recited charge motif (See *e.g.,* Example 1, page 49 and Examples 6 and 7, pages 54-55). Thirdly, the methods of treatment are directed to allergic conditions, which is a single category disease that is well described in the art and is characterized by an increase in serum IgE in the subject. Fourthly, in Examples 5 and 8 of the specification (pages 52-57), Applicant shows that administration of the polymers with the recited charge motif result in a decrease in the level of IgE antibodies. Finally, the findings in the instant application are corroborated in the art, which has established the relationship between specific charge motif of the polymer and the immunomodulatory effect of the polymer. No more is required to show possession of the claimed invention.
>
> The Examiner asserts that the specification does not adequately describe the genus of polymers that can be used in the claimed invention to have the requisite function of treating an allergic condition. As demonstrated above, the genus of polymers is adequately described. The specification provides the charge motif of the polymer that is required to treat an allergic condition (See *e.g.,* page 37, line 2 through page 38, line 10). In addition, Applicant provides a representative number of species of the polymer with the recited motif, including polysaccharides and polypeptides (See *e.g.,* pages 40-44).
>
> The Examiner reasons that the term "comprising" in claim 1 is open language which widens the scope and potentially includes molecules that not have been discovered, and molecules which have the claimed functionality but where the claimed functionality is not due to the recited motif but because of some other part of the molecule. Respectfully, this argument does not present a legal basis for rejecting the clams. Applicant has shown that the polymers with the recited motif have the claimed effect, which is all that is required to show possession of the claimed invention, regardless of the use of "comprising". That non-discovered polymers may also have the claimed functionality or that other parts of the molecule may exert a similar effect, is not relevant to Applicant's showing of possession of the claimed invention."

It is the Examiner's position that the specification does not disclose a correlation structure of the polymer and function (ability to treat an allergic condition other than asthmas) and in this case functional limitations (comprising repeating units of a charge motif characteristic of B fragilis polysaccharide A (PSA), the motif being a positivley charged free amino moiety and a negatively charged moiety selected from the group consiting of carboxyl, phosphate,

phosphonate, sulfate and sulfonate) such that a skilled artisan would have known what polymers have the claimed function and functional limitations. "Possession may not be shown by merely describing how to obtain possession of member of the claimed genus or how to identify their common structural features" In re Kubin, of record, at page 16. In this instant case, Applicants have not provided any guidance as to what polymers will result in the claimed functions and functional limitations. "Without a correlation between structure and function, the claim does little more than define the claimed invention by function" *supra*, at page 17.

Applicant's argument that all polymers with the specific charge motif have the required function is not sufficient as the art shows that not all polymers encompassed by the instant claim recitations are able to stimulate cellular immunity. The specification must also set forth the structureal features that allow one of ordinary skill in the are to produce the genus of polymers comprising repeating units of a charge motif characteristic of B fragilis polysaccharide A (PSA), the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate and sulfonate . The instant applications identifies PSA1 and CP1 that have the properties called for in the instant claims, but there is no guidance on other polymers with these properties. The working examples of PSA1 and CP1 are not sufficient support for the genss of all polymers comprising repeating units of a charge motif characteristic of B fragilis polysaccharide A encompassed by the claimed invention. In the instant case, definition by function does not suffice to define the genus because it is only an indication of what the polymer does and what functional properties it has, rather than what it is.

It remains the Examiner's position that the term 'comprising' in claim 1 is open language which widens the scope of the claim to include polymer species that include additional molecules. Applicant's assertion this argument does not present a legal basis for rejecting the clams is entirely unpersuasive. The structural features of the claimed compounds are very relevant to the written description requirement. The recitation encompasses both molecules which have as yet been discovered; molecules which have been discovered which inherently possess these physiochemical properties; peptides without disclosed sequences and polymers whose result is due to the interaction of the additional part(s) of the molecule and not due to the zwitterionic polymer portion at all. The specification does not adequately described the genus of polymers that can be used in the claims invention to have the requisite function of treating an allergic conditions. Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-2, 4-7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/59515 (IDS filed on 06/21/2004) in view of Tang et al. (PTO-892, Page 2, Reference U) for the same reasons as set forth in the Office Action mailed on 06/19/2008.

Applicant's arguments filed on 10/20/2008 have been fully considered, but are not found persuasive.

Applicant argues:

> "Firstly, the Examiner has not met her burden in considering all rebuttal arguments and evidence presented by applicants, as required (MPEP §2145; *Soni,* 54 F.3d at 750, 34 USPQ2d). Applicant presented arguments in the amendment of November 16, 2007. However, the Examiner has not considered those arguments on the merits and merely states that the arguments are unpersuasive.
>
> Secondly, the combination of the teachings of WO00/59515 and Tang et al. does not establish that the isolated polymers of the rejected claims can be used in the treatment of allergic conditions, as the Examiner has misinterpreted the teachings of both WO00/59515 and Tang et al.
>
> Applicant acknowledges the statement by the Examiner that WO00/59515 teaches that the isolated polymers can be used to treat Thl responsive disorders. However, WO00/59515 does not teach "(d)riving the immune response towards a Thl response when it is desirable to have a Thl cytokine response to treat disease, as is the case for allergies". The Examiner refers to page 31, lines 13-17 to support the assertion. The cited paragraph reads "When T cells are stimulated, they can differentiate toward either Th1 or Th2 cytokine production. The invention in this aspect is based on the discovery that the immunomodulating polymers of the invention can activate T cells to meditate cytokine release having a profile of Thl cytokines and thus useful any time it is desirable to activate T cells to produce a Thl cytoldne profile." Thus, the reference merely teaches that a Thl cytokine profile can be induced. WO00/59515 does not teach switching the immune response from a Th2 response to a Thl response.
>
> Furthermore, the Examiner has misapplied the teachings of Tang et al. to WO00/59515. Tang et al. teaches that the stimulation of the antigen-presenting activity of macrophages to increases Thl activity. Combining the methods ofWO00/59515 with a method for stimulating the antigen-presenting activity of macrophages does not result in the methods of the claimed invention. While, Tang et at. states that an immune switch from a Th2 response to a Thl response can protect against allergic allergen, a general method for immune switching is not provided.
>
> Thirdly, Tang et al. teaches away from applying its teachings to WO00/59515. WO00/59515 teaches an increase in IL-10 production. Tang et al. teaches that IL-10 is a cytokine necessary for Th2 proliferation, implying that increasing the production of IL-10 would not be favorable when trying to shift form a Th2 to Thl response. Thus, a person of ordinary skill in the art would be led away from applying the teachings of WO00/59515, disclosing an increase in IL-10 production, to the teachings of Tang et al.

> Fourthly, the instant application teaches that allergic conditions can be treated by " suppressing the IgE response (See *e.g.*, page 17, lines 28-31 and Example 8 on pages 55-57). While Applicants are not bound by a mechanism, the suppression of IgE can be achieved by suppressing the Th2 response. WO00/59515 teaches that administering the isolated polymers of the rejected claims result in an increase in the production ofIL-10. IL-10 is an inducer of the Th2 response. Thus, based on the teachings of WO00/59515, it is not expected that administering the isolated polymers of the rejected claims would result in a suppression of the Th-2 response. Therefore, the instant application provides unexpected results in that the polymers of the rejected claims can suppress IgE levels.
>
> Thus, at least for the reasons presented above, the combination of WO00/59515 and Tang et al. does not render obvious the methods of the rejected claims.
>
> Accordingly, reconsideration and withdrawal of the rejection is respectfully requested."

Applicant's argument that the Examiner has not met her burden in considering all rebuttal arguments and evidence presented by applicants, as required (MPEP §2145; *Soni,* 54 F.3d at 750, 34 USPQ2d). Applicant presented arguments in the amendment of November 16, 2007. However, the Examiner has not considered those arguments on the merits and merely states that the arguments are unpersuasive." is unpersuasive. The response the Examiner set forth in the Office Action mailed on 06/19/2008 was in response to Applicant's arguments. The Examiner need not specifically address each and every argument made by Applicant in their response. The Examiner need only consider every argument and she did. As stated in the Office Action mailed on 06/19/2008, the arguments were unpersuasive because WO 00/59515 teaches treating Th1 responsive disorders with the same recited polymer. Column 23, line 60 to column 24, line 7 teaches driving the immune response toward a Th1 response when it is desirable to have a Th1 cytokine response to treat disease, as is the case for allergies.

Contrary to Applicant's assertion, the Examiner has not misinterpreted the teachings of WO00/59515 or Tang et al. In fact, the post-dated art of Mazmanian et al. (PTO-892; Reference U) teaches that the zwitterionic polymers of the instant claims affect the formation of allergy by driving a Th1 response (In particular, page 854, right column to page 857, Box 2, whole

document). Applicant's assertion that although Applicant acknowledges the statement by the Examiner that WO00/59515 teaches that the although the isolated polymers can be used to treat Thl responsive disorders and that when T cells are stimulated, they can differentiate toward either Th1 or Th2 cytokine production but that it does not teach switching the immune response from a Th2 response to a Thl response is completely without merit. One of ordinary skill in the art knows that Th1 responsive disorders are those that "respond" by making the Th cytokine profile Th1. If the disorder "responds" by making it Th1, then it is not currently Th1. Therefore, it must necessarily be Th2.

It is the Examiner's position that every teaching of Tang et al. need not be incorporated into the instant rejection. As stated in the rejection set forth in the Office Action mailed on 05/18/2007, Tang et al. teaches that allergic inflammation is a Th2-mediated disease, an immune switch to Thl can protect against Th2-mediated allergic responses and that Thl stimulating activity of lung macrophages is responsible for the inhibition of allergic airway inflammation. The Examiner is confused as to why Applicant feels that Tang needs to present a general method for immune switching in order to be used as art. WO 00/59515 and Tang et al. also need not be in complete agreement to be used as art. As stated supra, Tang is relied upon for its teaching that teaches that allergic inflammation is a Th2-mediated disease, an immune switch to Thl can protect against Th2-mediated allergic responses and that Thl stimulating activity of lung macrophages is responsible for the inhibition of allergic airway inflammation. It is also not persuasive that WO 00/59515 teaches that zwitterionic polymers increase IL-10. They are used to treat Th1 responsive disorders and that teaching alone is sufficient.

10. Claims 1-2, 4-7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 7,026,285 (PTO-892, Reference B) in view of Tang et al. (PTO-892, Page 2, Reference Y) for the same reasons as set forth in the Office Action mailed on 06/19/2008.

Applicant's arguments filed on 10/20/2008 have been fully considered, but are not found persuasive.

Applicant argues:

> "The Examiner rejected claims 1-7 and 18 under 35 U.S.C. 103(a) as unpatentable over U.S. Patent 7,026,285 in view of Tang et al. *(supra)*. Applicant respectfully requests reconsideration. The cited patent is the U.S. equivalent of WO 00/59515. The rejection should be withdrawn for the same reasons as discussed above in connection with WO 00/59515.
>
> Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 1-7 and 18 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 7,026,285 in view of Tang et al."

It is the Examiner's position that the rejection of Claims 1-2, 4-7 and 18 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 7,026,285 (PTO-892, Reference B) in view of Tang et al. (PTO-892, Page 2, Reference Y) is maintained for the same reasons as set forth *supra* with regard to WO 00/59515 and Tang et al.

11. No claim is allowed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nora M. Rooney whose telephone number is (571) 272-9937. The examiner can normally be reached Monday through Friday from 8:30 am to 5:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by

telephone are unsuccessful, the examiner's supervisor, Eileen O'Hara can be reached on (571) 272-0878. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 19, 2008
Nora M. Rooney
Patent Examiner
Technology Center 1600

/Maher M. Haddad/
Primary Examiner,
Art Unit 1644